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Marine Casualty Investigations

Enquêtes sur les accidents maritimes

Investigation Report to the Minister pursuant to sections 542 or 545 of the Canada Shipping Act

Rapport d'investigation au Ministre conformément aux articles 542 ou 545 de la Loi sur la marine marchande du Canada

Canada

Ce rapport est aussi disponible en français

REPORT OF INVESTIGATION INTO THE STRANDING AND SUBSEQUENT TOTAL LOSS OF THE BRITISH REGISTERED, AUXILIARY ENGINED, THREE MASTED BARQUE, "MERKUR", AT THE APPROACHES TO COUNTRY HARBOUR, NOVA SCOTIA, CANADA, JUNE 4, 1988.

REPORT No. 527

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REPORT OF INVESTIGATION INTO THE STRANDING AND SUBSEQUENT TOTAL LOSS OF THE BRITISH REGISTERED, AUXILIARY ENGINED, THREE MASTED BARQUE, "MERKUR", AT THE APPROACHES TO COUNTRY HARBOUR, NOVA SCOTIA, CANADA, JUNE 4, 1988.

Particulars of Vessel

Name	"MERKUR"
Official Number	390187
Port of Registry	Southampton, England
Flag	British
Gross Tonnage	135.81
Net Tonnage	73.80
Length (registered)	31.0 m
Length (over all)	47.72 m
Draught (at time of casualty)	3.54 m forward 3.84 m aft
Type	Wooden, three masted barque
Built	1969, Skredsvik, Sweden
Propulsion	Sails and/or one 1,000 BHP Lister Blackstone diesel engine driving one controllable-pitch propeller, operated from a position on deck, close to the steering position
Maximum speed under engine power	15 knots
Cargo	Nil
Complement (At time of casualty)	Seven (five adults and two children)
Passengers	Nil
Classification	None

Owners	Trainpad Ltd. Great Yarmouth Norfolk, England
Operator	D.W.S. Summerskill, England

The operator reportedly owned the company 'Trainpad Ltd.' and was also in command of the "MERKUR", therefore, he operated the company from a commercial aspect and the "MERKUR" from the nautical aspect.

In view of the fact that, at the time of the inquiry, the "MERKUR" had broken up and her wreckage, including charts, log book, publications, plans, etc., had either sunk or been dispersed over a wide area of the coast line, it was not possible to inspect them. Consequently, the following list of equipment was compiled from the crew's memory and from an earlier inspection report made by a private marine surveying company.

Navigating Equipment

Radar	Krupp Atlas, ranges 0.25 mile to 48 miles - non operational.
Radio Direction Finder	Sailor
Echo Sounder (1)	Echolot
Echo Sounder (2)	Atlas
Sat Nav	Walker 412
VHF Radio (1)	Redifon 0-80 channels
VHF Radio (2)	Storno 0-80 channels
Gyro Compass	Fitted
Magnetic Compass	Fitted
Magnetic hand-held bearing compasses	2
Auto pilot	Nil
Speed Log	Walker Trident

Navigation Publications

Numerous charts including the one in use; i.e., Canadian Hydrographic Services (CHS) Chart No. 4321.

CHS Sailing Directions, Nova Scotia (SE Coast) and Bay of Fundy, Tenth Edition, 1985.

CHS Canadian Tide and Current Tables, Vol. 1, Atlantic Coast and Bay of Fundy, 1988.

Canadian Coast Guard Aids and Waterways, Atlantic Coast List of Lights, Buoys and Fog Signals, 1987.

Pumps

Two driven by power take-off from the main engine, capacity unknown.

One independent, portable, gasoline-engined, capacity unknown.

Three hand pumps operated from the weather deck, capacity unknown.

Life Saving Equipment

One six-person inflatable liferaft, last inspection date unknown.

Two inflatable boats

One wooden dinghy

Forty lifejackets reportedly of British MOT standards

Five lifebuoys, three reportedly of British MOT standards, two of which were fitted with smoke floats, the other two were of yachting standards.

Distress Flares

Two kits, date of manufacture unknown, each kit containing:

Two red parachute flares

Two white parachute flares

Two hand-held orange flares

Two hand-held white flares

Two hand-held red flares

Description of Vessel

The "MERKUR" was an all wooden, three masted, barque rigged, sailing vessel (see photograph) which was also fitted with a 1,000 BHP diesel engine driving a controllable-pitch propeller. The engine controls were situated on deck at the steering position.

The compass and steering wheel were situated at the after end of the weather deck and were 'open' inasmuch as there was no weather protection, such as from a wheel-house. A navigation/chart room was situated in the 'tween deck below the weather deck and contained all other navigational equipment and publications; it was accessible from the steering position by descending a companionway; i.e., stairway, into the 'tween deck and through a doorway.

She was originally built as a government fisheries research vessel for a European country and was of oak construction, transversely divided into three compartments by two watertight bulkheads; namely, accommodation forward, fish hold amidships and engine room aft. She was purchased by her latest owner in 1978 for his private use. The centre compartment (fish hold) was converted into accommodation and from that time the vessel became the permanent home of the owner and his wife and two children. (See sketch.) She was also used on occasion for charter to other persons who wished to sail on her while in the company of the owner and his family.

She was considered to be a non-commercial vessel and therefore not required to comply with the construction or safety-related regulations of any government; consequently, she had not been inspected by an authorized government agency since her purchase for private use. She had last been inspected by a private ship survey agency during November 1987 while at Sydney, Nova Scotia.

She was estimated by her owner to be valued at $900,000 and, reportedly, her insurance had lapsed at the time of the stranding.

NOTE: (1) All times are expressed in Atlantic Daylight Saving Time (UTC minus 3 hours).

(2) A glossary of Abbreviations and Terms can be found following the Findings in this report.

Background

The "MERKUR" stranded, in moderate weather conditions and during hours of darkness, becoming a total loss, on the coast of Nova Scotia in position 45°06.2'N, 61°34.5'W while enroute to Bermuda from Sydney, Nova Scotia, via various other ports.

The vessel's total complement was rescued by a Canadian Coast Guard inshore lifeboat soon after stranding and there were no injuries other than a bump to the head of one of the children when awakened by the impact of grounding. Examination by a physician determined that no treatment was required.

Pollution as a result of the stranding and loss was minimal consisting of the vessel's diesel fuel oil.

The rescuing Coast Guard lifeboat sustained damage which amounted to some $7,500, and placed her temporarily out of service.

The "MERKUR" first came to Canada from England during the summer of 1984 in order to participate in the Quebec Parade of Sail and the operator and his family were granted visitor status. Since then she had spent all of her time, approximately 4 years, in either Canadian or United States ports with the exception of a brief call at the French islands Saint-Pierre/Miquelon in June 1987, after which she returned to Canada and stayed at North Sydney and Sydney, Nova Scotia, until May 1988.

During the first 3 of her 4 years in North America, her time had been spent in various Canadian and United States ports, the latter part of the 3 years at Montreal. The Canadian immigration authorities allowed the operator and family continued visitor status during that time; however, Canadian Customs considered the activities of the "MERKUR" to be such as to render the vessel subject to duty and taxes. The operator was notified during May of 1987 and advised that the duty and taxes would be payable should the vessel still be in Canada after June 1, 1987 or if she should return to Canada other than in international service.

The "MERKUR" departed Montreal prior to June 1, 1987 and proceeded to Saint-Pierre/Miquelon situated off the south coast of Newfoundland, Canada, which took her to a foreign port; she then returned to Canada, first to Louisbourg and then to Sydney, Nova Scotia, arriving at Sydney on June 10, 1987. The operator and his family were again granted visitor status and, having completed an international voyage, there

were reportedly no further demands for duty and taxes.

The system of manning the "MERKUR" was that, in addition to the operator and family, several persons would be taken on board with the verbal agreement that a sum of money be given to the operator by each in order to pay for their costs. These persons, although referred to as crew, did not sign Articles of Agreement nor any other form of contract and did not receive remuneration.

The "MERKUR" first arrived in Canada with an international crew of six who all eventually left the vessel; many other persons subsequently joined and left. In December of 1987, three Canadians joined the vessel as crew, under the same conditions, having paid money to the operator and with the additional written agreement that they would sail with the vessel on an intended voyage to Bermuda, thus making up the vessel's latest complement of five adults and two children.

The intended voyage was to be made in order to complete a tentative sale arranged to take place in February 1989. A verbal agreement was reportedly made that the three crew would receive a sum of money from the operator on successful completion of the sale.

Narrative

The "MERKUR" departed Sydney, N.S., on May 25, 1988, bound for Hamilton, Bermuda, where the vessel was to be sold in February 1989.

It was intended to make an interim call at New York, USA, should the vessel's rate of progress and weather permit. Several other ports and harbours had been selected, either for visiting or as ports of refuge. The first three of these ports on the intended route were Louisburg, Port Hawkesbury and Country Harbour, all in Nova Scotia.

Other than the requirement that the vessel be in Hamilton in February 1989 for her proposed sale, there was no schedule for her proposed ports of call.

There were seven people on board, the owner/operator and his wife and two children who were British and three crew members who were Canadian residents of Cape Breton, Nova Scotia. They were accompanied by the operator's family's pet dog.

There was no set system of watchkeeping; the operator

navigated and the three crew members either steered the vessel or assisted as required. The operator's wife generally took care of the two children and kept a radio listening watch in the navigation room.

Offshore navigation consisted of plotting the vessel's positions on charts by use of the satellite navigation system and adjusting courses by means of the hand steering system and the magnetic compass to follow an intended track drawn on a chart. The gyro compass was not used for navigation but only as a source of checking that the magnetic compass did not contain errors for deviation. The one radar on board was non-operational.

The vessel called at Louisbourg, some 60 miles along the planned route, on the day after leaving Sydney in order to repair a sail and to avoid forecast storms; she stayed at Louisbourg for 3 days and then continued her voyage. The following day she called at Port Hawkesbury, a further 75 miles enroute, again to avoid forecast storms and to repair a generator; she stayed at Port Hawkesbury for 4 days and departed from there at 1030, June 4, 1988.

Weather forecasts issued by Environment Canada at 0546 and again at 1116 that morning, June 4, indicated the winds would be north-east 15 to 20 knots increasing to 20 to 30 knots by the evening, backing to northerly and remaining at approximately the same velocity during the following day, with an outlook for light winds.

The south-westerly offshore route of the "MERKUR" at a distance of some 5 miles from land meant that the north-easterly and the northerly winds would place her in the lee of the land with consequent slight to moderate seas. As the day progressed the weather forecast proved to be correct and for the first part of the day the sails were set and used in conjunction with the engine, but the sails were gradually reduced due to fluctuations in wind velocity and direction until approximately 2130, when sunset occurred, and it was then decided to proceed under engine power alone.

At 2130, the vessel was approximately 12 miles from Country Harbour and proceeding under power at an estimated half speed of some 5.7 knots. Due to a heavy rain squall and the fluctuating wind velocity, the decision was made to enter harbour

The appropriate large scale chart of the area, Canadian Hydrographic Services (CHS) chart 4234 was not on board. The only available chart of the area was CHS chart 4321, entitled Cape Canso to Liscomb Island, which is produced and intended

for coastal navigation; this chart was used in conjunction with the CHS publication, Sailing Directions (SE Coast) Nova Scotia and Bay of Fundy, to pre-plan the courses into Country Harbour.

It was decided to enter from a position 0.25 mile to the south of Country Island while proceeding in a westerly direction (see chartlet I) and then to round Flying Point to starboard and proceed in a north-westerly direction into the harbour.

The weather conditions while making the approach to Country Harbour and up to the time of stranding were observed by the operator to be, winds north-east 35 to 40 knots with intermittent heavy rain squalls which reduced visibility to zero to 1.5 miles, otherwise visibility was estimated to be 2 to 3 miles in light rain, the sea was slight and there was a moderate swell.

When making the approach to Country Harbour, the operator navigated by sighting the light from the lighthouse on the southern tip of Country Island and on occasion the light from the buoy marking Tom Cod Shoal which was to the south. A mental record was made that the lighthouse was abeam bearing 010° Magnetic (M) at 2249, distant 0.25 mile, and the vessel was steering a course of 280°M at a speed of 5.7 knots through the water, the speed being read from the streamed log and the bearings taken by a hand-held magnetic bearing compass. Meanwhile, one of the crew members steered the operator's required courses by use of the hand/hydraulic steering system on the directions of another crew member who viewed the magnetic steering compass. The third crew member was stationed forward and instructed to keep a look-out for shoals, lights and buoys.

After passing to the south of Country Island light, course was altered in stages of 5° to starboard until the vessel was heading 295°M and at 2259, 10 minutes later, a red flashing light, later determined to be buoy TT4 (Goose Island), was seen bearing some 30° on the starboard bow. The light was not expected due to it not being indicated on the chart in use, therefore, speed was reduced to approximately 3 knots and the vessel turned around to port 180° with the intention of retracing the course south of Country Island and back out to sea. It is estimated that the turn was completed at 2300 and the vessel's position at that time was 0.7 nautical mile south-south-east of Flying Point Shoal, Goose Island. (See chartlet II)

Having set an easterly course, the operator left the conduct of the vessel in the hands of the crew while he

proceeded to the navigation room to further consult chart 4321 and the Sailing Directions in order to determine the nature and position of the light. Returning to the steering position some seconds later, he took over the steering and turned the vessel to starboard until finally heading 310°M which was a course 15° to starboard of the original 295°M; the red buoy light was again visible and bearing some 5° on the starboard bow. He again left the conduct of the vessel to the crew and returned to the navigation room to re-consult the chart and Sailing Directions.

A short time later, at 2335, the vessel grounded off Flying Point at a speed of some 3 knots heading 310°M and while the operator was about to ascend the companionway from the navigation room.

The sound of the impact as the vessel rode onto the rocks awakened the two children, one of whom bumped his head as he arose from his bed.

The engine had been stopped immediately on grounding and an internal inspection revealed that sea water had entered the lower part of the accommodation indicating the vessel to be breached at the centre length of the hull.

All of the pumps were used but it became evident that the vessel's hull was becoming progressively breached as she moved with the sea and swell on the rocks; eventually the fore part and the engine-room also flooded and attempts at pumping were abandoned.

Lifejackets were donned by all on board; the liferaft was inflated and moved to the port side; i.e., the leeside of the deck. The swell running over the rocks was confused, reaching heights of 2 to 3 metres from troughs to crests, however, it was not believed necessary to abandon at that time and that it would be safer to stay on the vessel.

At 2346, 11 minutes after grounding, the operator's wife, on the direction of the operator, transmitted a Mayday call on channel 16 VHF radiotelephone which was responded to by Halifax Coast Guard Radio who in turn alerted the Rescue Coordination Centre (RCC) at Halifax. The Canadian Coast Guard cutter (CCGC) "BICKERTON" which was moored at her station in nearby Port Bickerton was alerted; as was the Canadian container vessel "ASL SANDERLING" which was enroute to St. John's, Newfoundland, and some 10 miles off shore.

Both vessels proceeded to the scene, however, the position of the grounding had been given by the "MERKUR" as being on Rose Shoal which is some 2.7 miles to the south-west

of Flying Point.

The CCGC "BICKERTON" arrived off Rose Shoal at 0030, June 5 and, having advised RCC that the "MERKUR" was not in that position, the "MERKUR" was requested to identify herself by igniting flares. One hand-held orange flare was ignited followed by a red parachute flare.

The CCGC "BICKERTON" and the "ASL SANDERLING" both observed the flares and it became apparent that the "MERKUR" was in fact off Flying Point. The "ASL SANDERLING" arrived at the scene at approximately 0040 and readied one of her lifeboats to effect a rescue should it be required; however, the "BICKERTON" arrived at 0050 and being smaller and designed for inshore rescue work, she was placed alongside the "MERKUR" and all the persons on board together with the dog were safely transferred to the "BICKERTON".

The sea swell at the position of the grounding caused the "BICKERTON" to roll heavily and rise and fall some 2 to 3 metres during which time, approximately 15 minutes, damage was caused to her radio antenna and loud hailers; in addition, damage was caused to the bottom hull plating as she occasionally struck the rocks.

The transfer was completed at 0105 and the rescued were landed at the Coast Guard Station at Port Bickerton at 0210, June 5.

On completion of the rescue, the "ASL SANDERLING" continued her voyage.

The "MERKUR" broke up on the rocks along the shore line during that day, June 5, 1988.

Analysis

1. Operation of the "MERKUR"

To continuously operate the "MERKUR" while under sail, a minimum working complement of eight was considered necessary, two of whom had to be experienced in order to take charge of two watches consisting of four persons in each watch.

The working complement during the latest voyage was four, consisting of the operator and three crew members. The crew members' previous experience of seafaring consisted of acting as crew on small inshore fishing boats during one-day trips to the local fishing grounds.

They had no experience of sailing nor of navigation other than observing the actions of the fishing boat operators during daylight hours.

It follows that, while the "MERKUR" was at sea during her latest voyage, then the operator and three crew members had to be constantly on watch which necessitated frequent stops in ports or harbours for rest periods.

The "MERKUR" departed Port Hawkesbury at 1030, June 4, after all aboard had had 4 days rest. The casualty occurred that night, June 4; therefore, the crew can be considered to have been well rested.

2. Flying Point

The position in which the "MERKUR" stranded consists of the rocky continuation of Flying Point on Goose Island as it projects into and under the sea. It is open to the Atlantic Ocean and therefore subject to the movement of its seas and swells causing rough water and breakers to flow in a confused manner up and onto the shore line. Local knowledge indicates the seas in the area to be seldom calm or light no matter what the local weather conditions should be.

3. Preparations for abandoning

At first it was uncertain whether abandoning would become necessary; however, precautionary measures were taken inasmuch as all on board donned lifejackets and the other lifesaving appliances were readied; i.e., liferaft, boats and flares. The Mayday radiotelephone call alerted the Canadian Coast Guard and their appropriate search and rescue procedures were immediately implemented.

4. Tides and Tidal streams (currents)

The Canadian Tide and Current Tables, Volume 1, Atlantic Coast and Bay of Fundy, do not contain predictions for the immediate area of the stranding, however predictions are available for nearby Isaacs Harbour and Port Bickerton.

On June 5, 1988, the predicted times of high water at Isaacs Harbour and Port Bickerton were 0014 and 0003 respectively. The range of tide in both these locations was 1.0 m and 1.1 m respectively. The tidal streams produced are weak and are described in the Sailing Directions as follows;

> The flood stream runs west, and its rate is usually less than 1 knot. The flow is much influenced by winds.

As the stranding occurred at 2335, June 4, some 39 minutes before high water at Isaacs Harbour and some 28 minutes before high water at Port Bickerton, it is considered unlikely that the vessel was subject to an appreciable set at this stage of the flood.

5. Abandoning and rescue

Although close to the shore of Goose Island, some 300 m, the shore line could not be seen and the sea conditions over the rocks between the shore and the vessel were very rough that night. The wind later veered from north-east to easterly and then to south-easterly; consequently, abandoning to the liferaft or boats would have proved very hazardous had they drifted toward the shore.

Remaining with the vessel would also have been hazardous. The vessel's breakup became a continuing process as she moved on the rocks and then became swamped by the seas. The masts, spars and rigging started to break and fall at an early stage in the breakup.

The Mayday call and the quick response of the CCGC "BICKERTON", together with the placing of the "BICKERTON" alongside the "MERKUR", was clearly the most appropriate form of rescue, even though that action and the transferring of the persons and dog to the "BICKERTON" was in itself hazardous.

6. "MERKUR", Experience of Country Harbour approaches

None of the persons on board the "MERKUR" had prior experience of the harbour or its approaches. The harbour had been viewed from the land by the operator after travelling by car from Port Hawkesbury but the approaches cannot be adequately seen from the land.

7. Buoyage System

The buoyage system in the area is termed the New Canadian Buoyage System which was introduced in 1983 to all Canadian waters. It is a system which has been adopted for use world-wide by the International Association of Lighthouse Authorities.

Following the stranding, all navigational aids in the

area were surveyed by the Canadian Coast Guard and found to be functioning correctly and in the positions as depicted on the charts and as stated in the List of Lights, Buoys and Fog Signals, Atlantic Coast, 1987.

8. Buoy "TT4"

It was alleged by the vessel that this buoy was poorly placed. A buoy has reportedly been in this position since 1906 and Marine Casualty Investigations records, kept since 1975, show no previous strandings in the area. Also, local fishermen and seamen could not recollect a time when there was no buoy nor any previous stranding on or near Flying Point; thus, apparently, the buoy has served mariners well.

Although it is acknowledged that buoys must be placed according to underwater obstructions rather than land masses, it will be seen that on reference to the illustration in the publication on The New Canadian Buoyage System, (see annex I) a buoy is pictured in a similar situation to buoy TT4; it is a common situation for such a buoy. On examination of the correct local chart to use for the area, CHS 4234, it will be seen that on making a passage from the landfall buoy TT into Country Harbour, that TT4 is well placed as a starboard hand buoy. It will also be realized that because of the number of small local harbours, the off-lying dangers and the several alternative approaches, reference to chart CHS 4234 in navigating that area is essential.

9. Charts and the approaches to Country Harbour

To enter Country Harbour, the bay between Cape Mocodome and New Harbour Head must first be navigated (see chartlet I). One of two main entrances to the bay is from the south-east and the channel leading to Country Harbour from that position is marked at its south-eastern (extreme) end by a fairway buoy, consisting of a red and white painted pillar buoy equipped with a whistle and exhibiting a flashing white light of the characteristic A in the morse code; i.e., a short flash followed by a long flash, 10 times per minute.

The other main entrance is from the south-west and is similarly marked.

From the south-eastern fairway buoy, a course of 338°M for a distance of 8 miles will take a vessel through a deep water channel some 1.5 miles wide, which becomes progressively sheltered by the land until off the

entrance to Country Harbour. As for all buoyed channels within the system, red painted or red lighted buoys are to be passed while on the vessel's starboard side when inbound and on the port side when outbound. The chart used by "MERKUR", CHS 4321, does not show all of the buoys in the bay but only the outermost buoys including the fairway buoys.

The inner part of the bay shown on CHS chart 4321 gives no navigational assistance other than sounding, shoals and land contours, however, it does indicate prominantly that the appropriate chart for the area is CHS 4284 or its replacement 4234, which shows soundings in metres.

10. **The lack of the appropriate chart**

Reportedly a complete set of charts for the Atlantic coast of Nova Scotia had been purchased at Sydney, Nova Scotia, prior to sailing, however, the chart CHS 4234 had been omitted from the set and its absence not noticed.

Enquiries of the two local marine chart supply companies, one in Sydney and one in North Sydney, show that they have no records of any chart purchases made by representatives of the "MERKUR", the only transaction being the ordering of a chart of Plymouth Harbour, England, by the operator which was not collected or paid for.

11. **Sailing Directions, List of Lights Buoys and Fog Signals and Charts**

The Sailing Directions, Nova Scotia (SE Coast) and Bay of Fundy 1985, were consulted by the operator in conjunction with CHS chart 4321 when pre-planning the entry into the bay. The exposed position of the steering wheel and engine controls on the weather deck necessitated memorizing the details while in the navigating room below deck.

In the explanatory notes on page xiii of the Sailing Directions, it states that they amplify charted detail and that they are intended to be read in conjunction with the charts quoted in the text; the chart quoted for the area of the stranding is CHS Chart 4284.

It was alleged by the vessel that, although some buoys were referred to in the Sailing Directions, they were not marked on the general charts. Local navigation requires at least four publications; i.e., Sailing

Directions, Light Lists, Notice to Mariners and the appropriate local chart. Safe navigation depends upon the appropriate use of all four publications.

There are no written policy directives within the Canadian Hydrographic Service as to which buoys are to be indicated on the smaller-scaled, general or offshore charts; generally only the offshore buoys are shown. However, certain other buoys are also indicated if they are felt to be 'key buoys'.

Rose Shoal, which was initially thought to be the position of the stranding, is described in the directions as being marked by a light and bell buoy though it does not give the characteristics of the light.

Rose Shoal buoy is shown and described on chart 4284 but not on the chart in use, chart 4321.

Buoy TT4 (Goose Island) is shown on chart 4284 but not on the chart in use, chart 4321; neither is it mentioned in the Sailing Directions.

All of the buoys in the area are described in the List of Lights, Buoys and Fog Signals and their positions are also shown; however, although on board, this publication was not consulted.

12. Entry into the bay

Entry into the bay at the approaches to Country Harbour was made from the west between Country Island and Tom Cod Shoal.

While there are no regulations as to the direction or position from which a vessel should enter harbour, it is the usual practice for those who do not have local knowledge or the benefit of a pilot's advice to make the entry from the area of a fairway/landfall buoy, when approaching those harbours where a buoyage system is in place.

Such a system is in place for the bay and two fairway buoys, TT and VC, are shown on chart 4321, indicating the outer limits of channels leading to the several harbours and ports within the area, including Country Harbour.

In the absence of the appropriate large scale chart and of consulting the List of Lights, Buoys and Fog Signals for the area, had entry been made from the approximate

position of the fairway buoy TT, then the flashing red light to the south-west of Flying Point could have been recognized as a lighted buoy beyond buoy TT2, marking a continuation of the starboard side of the buoyed channel towards Country Harbour and Isaacs Harbour. It could also have indicated that it marked the outer limit of the channel into Drum Head and Seal Harbour.

13. **Weather Conditions on approaching the bay**

Weather forecasts issued by Environment Canada at 0546, June 4, for the area of stranding; i.e., Eastern Shore, which were again issued at 1116 the same day, read in part:

> Eastern Shore
> Fourchu.
> Winds light increasing to northeast 15 to 20 knots this afternoon and to northeast 20 to 30 this evening. Winds backing to northerly 15 to 25 Sunday afternoon. Good visibility.
> Little temperature change.
> Outlook for Monday...Light Winds.

However, at 1120, June 4, gale warnings were issued for Browns and LaHave Banks, some 200 miles ahead and in the path of the "MERKUR" and, due to increasing north-easterly winds and rain, it was decided to seek shelter in Country Harbour.

The weather experienced from departure Sydney until 2230 that day was as expected from the forecast; however, it reportedly deteriorated quickly during the one hour from 2230 until grounding, with the wind increasing to north-east 35 to 40 knots accompanied by intermittent heavy rain squalls which reduced visibility to an estimated zero to 1.5 miles.

The weather conditions as recorded by an Environment Canada recording station, situated some 36 miles further along the intended route, show that for the period 2 hours prior to stranding the wind blew from the north-east, increasing from a mean velocity of 21 knots to 25 knots with peak velocities of 31 knots.

The "ASL SANDERLING" observed the weather conditions to be, winds northeast 20 to 25 knots, visibility 5.0 miles in rain; the night was described as very dark under an overcast sky with the contours of the land not visible, however, all lighted navigational aids were clearly visible up to 5 miles. It should be noted that

the height of the navigation bridge of the "ASL SANDERLING" was some 20 m, considerably higher than the "MERKUR's" approximate 2 m; therefore, the discrepancy between the two accounts of visibility could be attributable to that factor.

The CCGC "BICKERTON" described the weather as, winds easterly 35 to 40 knots, visibility 0.25 to 2 miles in rain with a moderate to heavy swell.

In general, it is considered that a well found vessel, faced with a moderately adverse weather forecast, is better off hove-to off the coast than attempting a land fall in poor weather conditions at night with no local advice and being without the appropriate navigational publications or aids.

14. Steering procedures and look-out

The magnetic steering compass was situated approximately 1 metre forward of the steering wheel and was slung in gimbals in a wooden box; the box was glass-topped providing protection for the compass and was lit from within by an electric light. Due to the rain, the crew member employed at steering could not see the compass; therefore, another crew member stood over the compass box and directed him with hand and voice signals to steer the required course by turning the steering wheel to left or right by a number of spokes. It was necessary to frequently clear rain water off the glass in order to see the compass. The other crew member kept a lookout forward. It is possible that during these procedures and while the operator was in the navigation room consulting the chart and Sailing Directions the vessel swung off course. It should be noted that although the course of 310°M was reportedly maintained and the red flashing light remained 5° to starboard, none of the crew members had experience of the night time operations of a vessel. Consequently, their appreciation of the distance of visibility of lights, the bearings of lights and accurate steering was limited.

15. Navigation

Having passed to the south of Country Island and when turning to starboard to approach Country Harbour, a red flashing light was seen to starboard which was not indicated on chart CHS 4321 and was not mentioned in the Sailing Directions. The vessel was turned to port to retrace the course south of Country Island and the operator proceeded to the navigation room to reconsult

the chart and the Sailing Directions in order to find a description of the light and its position; the only buoy mentioned in the directions was that on Rose Shoal which is positioned some 2.7 miles to the south-west of Flying Point. The light characteristics were not given and neither buoy TT4 nor Rose Shoal buoys were shown on the chart.

It was decided that the light must be the buoy described in the Sailing Directions as marking Rose Shoal and the vessel was again turned, this time to starboard, seaward, until on the heading of 310°M. Uncertain that the light, now 5° on the starboard bow, was in fact Rose Shoal, the operator again proceeded to the navigation room and consulted the chart and Sailing Directions. It was while he was returning to the steering position and while at the bottom of the companionway that the vessel grounded; the belief was that the vessel had grounded on Rose Shoal.

It should be noted that the vessel's position was accurately ascertained when passing to the south of Country Island at 2249 and she grounded at 2335, 46 minutes later. During that time she had been turned twice and her speed had been reduced to 3.0 knots. However, the light on TT4 buoy was first sighted at 2259, 10 minutes after passing Country Island and bearing some 30° on the starboard bow when the vessel was heading 295°M.

It would have required a south-westerly set and drift of some 2.5 miles, during the elapsed 10 minutes, which equals a rate of some 15 knots for the vessel to have become positioned to the south-east of Rose Shoal.

While acknowledging that the windage due to the masts and spars on vessels such as the "MERKUR" is considerable, producing considerable leeway, such a rate of leeway is unlikely under the circumstances.

Confirmation that the vessel was off Flying Point could have been obtained by observations of Country Island light and Light-buoy TT2, the latter light was at about 1.75 mile distant. Both these lights are shown on the chart in use, CHS 4321.

16. Navigational Equipment

The radar was non-operational and had not been in use for a considerable time before departing from Sydney, Nova Scotia, on the last voyage. The satellite naviga-

tion system was in good condition and functioning accurately. The gyro compass reportedly had no directional errors.

Reportedly, the magnetic steering compass had good directional and stability properties and the two hand-held bearing compasses were in good condition.

Of the two depth sounders on board, both were situated in the navigation room and one was reportedly switched on and working correctly; however, this was not consulted. The rapidly shoaling water as the vessel approached Flying Point would have warned of the danger of grounding.

17. Canadian Coast Guard (CCG)

When confusion arose over the "MERKUR'S" position and she was turned to head easterly and to sea after first sighting the red flashing light, thought was given to calling the CCG on the VHF radiotelephone to enquire as to the light's position and purpose; however, this was not done. Had it been done, then the CCG would have advised the "MERKUR" and, if the situation warranted, would have alerted the "BICKERTON", placing her on immediate standby. If the "MERKUR" had remained confused, the "BICKERTON", or a local fishing vessel, could have guided her into harbour.

It is not unusual for all of the nine lifeboat stations in the Maritimes to provide this service to vessels which do not have local knowledge or the appropriate navigational aids and charts, and who request guidance.

18. Optional approaches

Civil Twilight occurred at 0443, June 5, 1988, and sunrise at 0520; the grounding occurred at 2335, June 4. In the absence of radar and the appropriate chart, the approximate 6 hours to sunrise could have been used by proceeding toward the fairway buoy TT and heaving-to off the buoy until sunrise occurred. Alternately, if the more difficult approach off the south of Country Island had still been preferred, then daylight would have been a more appropriate time.

19. Canadian Coast Guard Cutter "BICKERTON"

The vessel is a steel and aluminum constructed lifeboat with a self-righting capability. She is designed specifically for coastal inshore rescue work. (See

photograph.)

She is twin screw, 13.45 m overall length, 3.86 m beam and has a maximum draught of 1.02 m. Her maximum speed is 14 knots and she carries a crew of three persons comprising a coxswain and two deck-hands.

The vessel is fitted with radar, Loran C and medium frequency/very high frequency/direction finding radio-telephone, in addition to many other electronic navigating and safety devices.

The "BICKERTON" is based at Port Bickerton, some 7 nautical miles from the scene of the stranding.

The lifeboat station is manned from 0800-1600. During off hours, as in this case, the crew is contacted by telephone pagers and they maintain a 30 minute standby. The tasking of the "BICKERTON" that night and the times elapsed were as follows:

"MERKUR"	Aground	June 4	2335
"MERKUR"	Mayday	June 4	2346
"BICKERTON"	Tasked	June 5	0009
"BICKERTON"	On Scene	June 5	0050
"MERKUR"	Abandoned	June 5	0105
"BICKERTON"	Returned to CG Station	June 5	0210

Damage incurred to the "BICKERTON" was later repaired at a cost of some $7,500, requiring the vessel to be temporarily out of service.

20. M.V. "ASL SANDERLING"

The vessel is an all steel container and roll on, roll off vessel built in 1977. She is 193.45 m in length overall, 27.06 m beam. Propulsion is by means of two diesel engines developing 19,000 BHP, driving one controllable-pitch propeller; there are two bow thrusters.

The vessel is a large commercial vessel intended to transport cargo between ports. Her lifesaving equipment, as for all commercial vessels, is designed primarily to safeguard the lives of her crew.

The "ASL SANDERLING" was the first on the scene followed closely by the "BICKERTON". One of her lifeboats was readied for lowering to assist the "MERKUR" should this become necessary. The planned action was to manoeuvre the lifeboat alongside the "MERKUR" while attached to the "ASL SANDERLING" with lines, the lines to be used in retrieving the lifeboat, together with its crew and the rescued.

21. **Urgency to sail**

The Canadian Departments of Immigration and, separately, of Customs and Excise were anxious to regularize the extended stay of the "MERKUR" in Canada. The immediate cash situation for the "MERKUR" was poor; thus, there were some compelling reasons for the vessel to commence her trip south.

22. **Definition: Passengers versus crew**

Whilst the three Canadian nationals aboard were described as crew, these persons paid money for their keep and were verbally promised a sum of money on successful sale of the vessel.

The vessel was Southampton, United Kingdom, registered but sailing in Canadian waters and was a non-safety convention ship. The Canada Shipping Act definition of a passenger refers to any person carried on a non-safety convention ship not including crew or a guest of the owner of the ship if it is used exclusively for pleasure and the guest is carried without remuneration or any object of profit (see annex II).

Some remuneration was paid by the three to the ship and they expected some payment on the sale of the vessel; consequently, their legal status aboard was not entirely clear.

23. **"MERKUR" Complement, qualifications and experience**

The operator had experience of sailing during the 20 years prior to the casualty and had been operator of the "MERKUR" for 10 years. He held a Yacht Master Offshore Certificate issued by a Dutch sailing association in 1878.

The Ships' Deck Watch Regulations (see annex VI) made pursuant to the Canada Shipping Act, require that all pleasure yachts over 100 gross tons carry a master duly qualified. The "MERKUR" did not have a master so

qualified.

Section 109(1)(a) of the Canada Shipping Act (1970) in Part II of the Act, that part covering the Certification of Officers, does not apply to pleasure yachts. However, a legal opinion provided to Transport Canada points out that Section 109 does not prohibit such a requirement and such additional powers are provided in Sections 400(1)(o) and 730(1)(h) of the same Act. (See Annex II). The legal opinion therefore considers that the requirement for pleasure yachts over 100 gross tons, as stipulated in the ships' Deck Watch Regulation's, to carry a duly qualified master is 'intra vires'.

The operator's wife had experience of sailing during the 16 years prior to the casualty, the last 10 years on the "MERKUR". She held no formal marine qualifications nor was she required to by regulations.

Of the three crew members, all had some experience as deck-hands on small Canadian motorized inshore fishing vessels. This experience consisted of occasional jobs during the summers of the past 8 years. They held no formal marine qualifications nor were they required to by regulations.

The two children on board were not considered to be working members of the ship's complement.

24. Use of marine publications

Acknowledging that the "MERKUR" was termed a pleasure yacht and therefore no regulations or recommendations applied to her maintenance, safety features or operation, there are several Canadian publications, other than those carried on the "MERKUR", which are available to all and which would have assisted in the safe passage of the vessel. These are listed as follows and the relevant sections are reproduced in annexes to this report:

(a) Canadian Coast Guard Recommended Code of Nautical Procedures and Practices 1985, based on the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers.

(b) Canadian Coast Guard, Charts and Publications Regulations.

(c) Transport Canada - The New Canadian Buoyage System.

(d) Canadian Coast Guard, Notices to Mariners, Annual Edition, 1988.

Findings

The barque-rigged, three-masted, auxiliary-engined sailing vessel "MERKUR" stranded and became a total loss on the coast of Nova Scotia while under engine power only, during hours of darkness and in limited visibility in rain, due to an error of navigation. It would appear that the contributory causes of the stranding were as follows:

- None of those aboard had local knowledge of the area;
- The appropriate large scale chart was not on board;
- There was a lack of effective pre-planning of navigation and the best use of the available navigational aids was not made;
- Position for entry into the bay was not made from the direction of the fairway/landfall buoy, which, in the absence of the correct chart, would have enabled the lit starboard-hand buoys to have been followed; and
- Effective use was not made of the echo sounder.

Other Findings

The electronic navigational aids were remotely placed relative to the conning position.

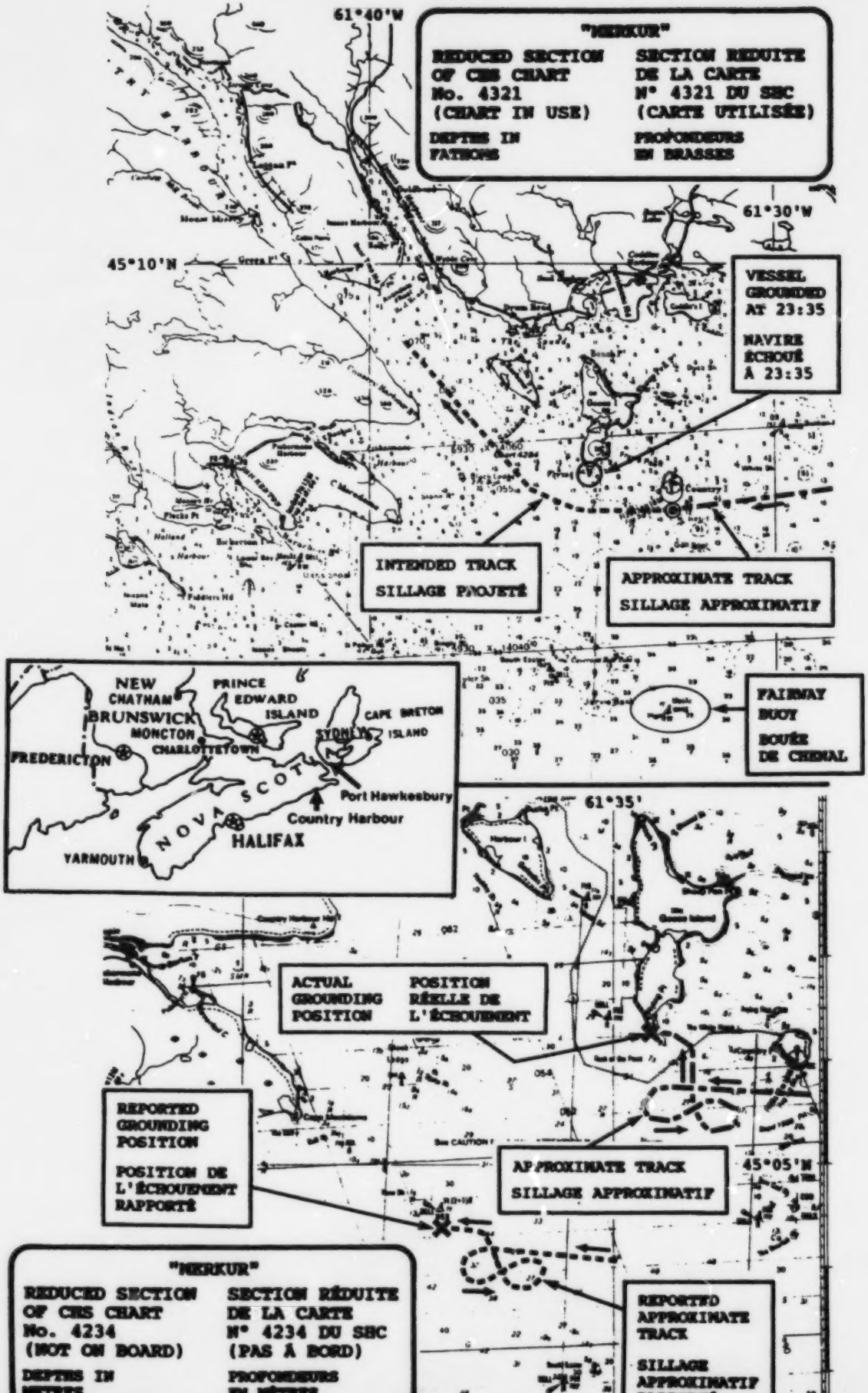
The magnetic compass was difficult for the helmsman to read in the prevailing conditions.

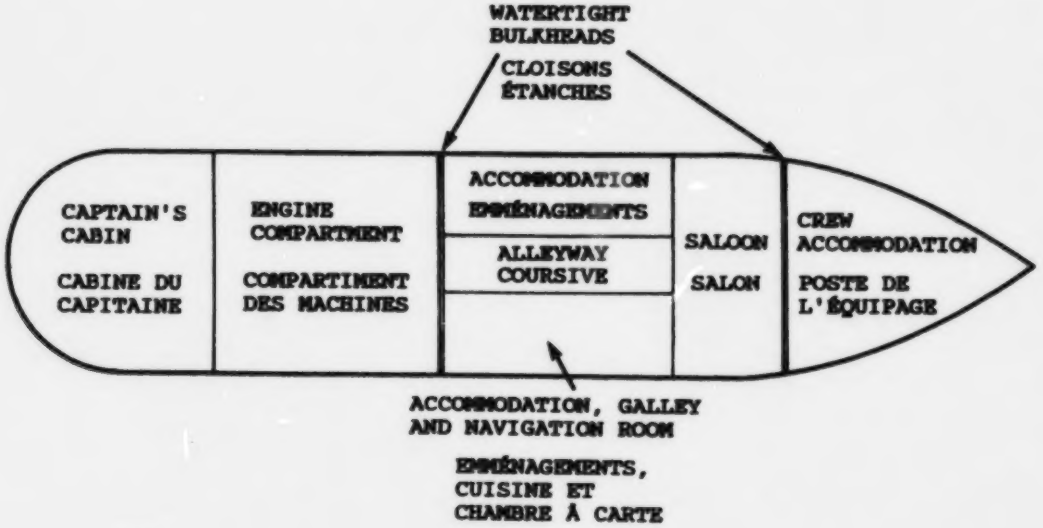
The radar had been out of service for some time previously.

No attempt was made by radiotelephone to seek local guidance.

Marine Casualty Investigtions
Transport Canada
110 O'Connor Street
Ottawa, Ontario
K1A 0N5

OTTAWA, ONTARIO
MAY, 1989.


"MERKUR"
REDUCED SECTION OF CHS CHART No. 4321 (CHART IN USE)
SECTION REDUITE DE LA CARTE N° 4321 DU SHC (CARTE UTILISÉE)
DEPTHS IN FATHOMS
PROFONDEURS EN BRASSES
61°40'W
61°30'W
45°10'N
VESSEL GROUNDED AT 23:35
NAVIRE ÉCHOUÉ À 23:35
INTENDED TRACK
SILLAGE PROJETÉ
APPROXIMATE TRACK
SILLAGE APPROXIMATIF
FAIRWAY BUOY
BOUÉE DE CHENAL
NEW BRUNSWICK
CHATHAM
PRINCE EDWARD ISLAND
CAPE BRETON ISLAND
SYDNEY
MONCTON
CHARLOTTETOWN
FREDERICTON
NOVA SCOTIA
Port Hawkesbury
Country Harbour
HALIFAX
YARMOUTH
61°35'
ACTUAL GROUNDING POSITION
POSITION RÉELLE DE L'ÉCHOUEMENT
REPORTED GROUNDING POSITION
POSITION DE L'ÉCHOUEMENT RAPPORTÉ
APPROXIMATE TRACK
SILLAGE APPROXIMATIF
45°05'N
"MERKUR"
REDUCED SECTION OF CHS CHART No. 4234 (NOT ON BOARD)
SECTION RÉDUITE DE LA CARTE N° 4234 DU SHC (PAS À BORD)
DEPTHS IN METRES
PROFONDEURS EN MÈTRES
REPORTED APPROXIMATE TRACK
SILLAGE APPROXIMATIF RAPPORTÉ



PLAN VIEW OF BELOW DECK COMPARTMENTS
AS DESCRIBED BY THE CREW

PLAN D'ENSEMBLE DES COMPARTIMENTS SOUS LE PONT
TEL QUE DÉCRIT PAR L'ÉQUIPAGE

The New Canadian Buoyage System

ANNEX I

BUOY TYPE	BUOY SHAPE AND COLOUR	TOPMARK	LIGHT COLOUR	LIGHT CHARACTERS	CHART SYMBOLS
LATERAL					
PORT	PILLAR CAN SPAR	GREEN CAN	GREEN	Fl OR Q	
STARBOARD	PILLAR CONICAL SPAR	RED CONE	RED	Fl OR Q	
FAIRWAY	PILLAR SPHERICAL SPAR	RED SPHERE	WHITE	Mo(A) OR LFl	
BIFURCATION					
PORT	PILLAR CAN SPAR	GREEN CAN	GREEN	FI(2+1)5S OR FI(2+1)10S	
STARBOARD	PILLAR CONICAL SPAR	RED CONE	RED	FI(2+1)5S OR FI(2+1)10S	

BUOY TYPE	BUOY PLACEMENT	USER'S GUIDE	ILLUSTRATION OF USE
LATERAL			
PORT	Used to mark the port (left) side of a channel when proceeding in the upstream[1] direction	Keep this buoy on your port (left) hand side when proceeding in the upstream[1] direction	
STARBOARD	Used to mark the starboard (right) side of a channel when proceeding in the upstream[1] direction	Keep this buoy on your starboard (right) side when proceeding in the upstream[1] direction	UPSTREAM
FAIRWAY	Used to indicate that there is safe water all around the buoy (e.g. landfalls, mid channels)	You may pass this buoy on either side but when it is marking the middle of a channel it should be kept on your port (left) side when proceeding in either direction	LANDFALL MID CHANNEL
BIFURCATION			
PORT	Used, at a point where a channel divides, when proceeding in the upstream[1] direction, to indicate that the preferred channel is to starboard (i.e. to the right)	You may pass this buoy on either side when proceeding in the upstream[1] direction but the main or preferred channel will be entered by keeping this buoy on your port (left) side. Consult your chart for details of the danger being marked	SECONDARY CHANNEL UPSTREAM
STARBOARD	Used, at a point where a channel divides, when proceeding in the upstream[1] direction, to indicate that the preferred channel is to port (i.e. to the left)	You may pass this buoy on either side when proceeding in the upstream[1] direction but the main or preferred channel will be entered by keeping this buoy on your starboard (right) side. Consult your chart for details of the danger being marked	MAIN CHANNEL SHOAL UPSTREAM SECONDARY CHANNEL

ANNEX II

CHAPTER S-9

An Act respecting shipping

SHORT TITLE

Short title

1. This Act may be cited as the *Canada Shipping Act*. R.S., c. S-9, s. 1.

INTERPRETATION

Definitions

2. In this Act,

"passenger" «passager»

"passenger" means any person carried on a ship, but does not include

(*a*) a person carried on a Safety Convention ship who is

(i) the master or a member of the crew or a person employed or engaged in any capacity on board the ship on the business of that ship, or

(ii) under one year of age;

(*b*) a person carried on a ship that is not a Safety Convention ship who is

(i) the master or a member of the crew, or a person employed or engaged in any capacity on board the ship on the business of that ship,

(ii) the owner or charterer of the ship, a member of his family or a servant connected with his household,

(iii) a guest of the owner or charterer of the ship if it is used exclusively for pleasure and the guest is carried on the ship without remuneration or any object of profit, or

(iv) under one year of age; or

(*c*) a person carried on any ship in pursuance of the obligation laid upon the master to carry shipwrecked, distressed or other persons or by reason of any circumstances that neither the master nor the owner nor the charterer, if any, could have prevented or forestalled;

APPENDICE II

CHAPITRE S-9

Loi concernant la marine marchande

TITRE ABRÉGÉ

Titre abrégé

1. *Loi sur la marine marchande du Canada*. S.R., ch. S-9, art. 1.

DÉFINITIONS

Définitions

2. Les définitions qui suivent s'appliquent à la présente loi.

«passager» "passenger"

«passager» signifie toute personne transportée sur un navire, mais ne comprend pas

a) une personne transportée sur un navire ressortissant à la Convention de sécurité et qui est

(i) le capitaine ou un membre de l'équipage, ou une personne employée ou occupée à bord, en quelque qualité que ce soit, pour les affaires de ce navire, ou

(ii) âgée de moins d'un an;

b) une personne transportée sur un navire ne ressortissant pas à la Convention de sécurité et qui est

(i) le capitaine ou un membre de l'équipage, ou une personne employée ou occupée à bord, en quelque qualité que ce soit, pour les affaires de ce navire,

(ii) le propriétaire ou l'affréteur du navire, un membre de sa famille ou un domestique à son service,

(iii) un invité du propriétaire ou de l'affréteur du navire, si celui-ci est utilisé exclusivement à des fins d'agrément et si l'invité est transporté sur ce navire sans rémunération ou intention de profit, ou

(iv) âgée de moins d'un an; ni

c) une personne transportée sur un navire, soit en exécution de l'obligation qui incombe au capitaine de transporter des naufragés, des personnes en détresse ou d'autres personnes, soit par suite de circonstances que ni le capitaine ni le propriétaire ni l'affréteur (s'il en est) ne pouvaient empêcher ni prévenir;

"PART II

CERTIFICATION OF MASTERS AND SEAMEN

Definition of "ship"

109. (1) In this Part, "ship" includes any description of vessel, boat or craft designed, used or capable of being used solely or partly for marine navigation without regard to method or lack of propulsion, but excludes

(*a*) pleasure yachts of less than twenty metres in length; and

(*b*) any vessel, boat or craft, of any length, propelled manually by oars or paddles.

«PARTIE II

BREVETS ET CERTIFICATS

Définition de «navire»

109. (1) Pour l'application de la présente partie, sont assimilés à un navire les bâtiments, bateaux ou embarcations de toutes sortes, conçus, utilisés ou utilisables, exclusivement ou non, pour la navigation maritime, indépendamment de leur mode de propulsion ou de l'absence de propulsion. La présente définition exclut :

a) les yachts de plaisance d'une longueur de moins de vingt mètres;

b) les bâtiments, bateaux ou embarcations de quelque longueur que ce soit, propulsés manuellement à l'aide d'avirons ou de pagaies.

PART VIII

SAFETY

Steamship Inspection Service

Regulations

400. (1) The Governor in Council may make regulations respecting

"(*a*) the manning of steamships;"

PARTIE VIII

MESURES DE SÉCURITÉ

Service d'inspection des navires à vapeur

Règlements

400. (1) Le gouverneur en conseil peut établir des règlements concernant

«*a*) le personnel embarqué des navires à vapeur;»

"PART XX

POLLUTION PREVENTION AND CONTROL

Regulations

730. (1) The Governor in Council may make regulations

(*h*) respecting the number and qualifications of navigation and engine room personnel, including pilots and lookouts, required to be on duty on ships of any class designated in the regulations in any waters to which this Part applies and with respect to which such regulations are made applicable;

«PARTIE XX

PRÉVENTION ET CONTRÔLE DE LA POLLUTION

Règlements

730. (1) Le gouverneur en conseil peut établir des règlements

h) concernant le nombre et la compétence du personnel de navigation et du personnel de la chambre des machines, y compris les pilotes et le personnel de veille, qui doit être en service à bord des navires appartenant à toute catégorie indiquée dans les règlements lorsqu'ils se trouvent dans des eaux auxquelles s'applique la présente Partie et à l'égard desquelles ces règlements sont rendus applicables;

ANNEX III

CHAPTER 1415

CANADA SHIPPING ACT

Charts and Publications Regulations

REGULATIONS REQUIRING SHIPS TO HAVE ON BOARD, MAINTAIN AND USE APPROPRIATE CHARTS, TIDE TABLES, LISTS OF LIGHTS AND OTHER NAUTICAL PUBLICATIONS

Short Title

1. These Regulations may be cited as the *Charts and Publications Regulations*.

Interpretation

2. In these Regulations,

"chart" means a nautical chart;

"catalogue" , in respect of an area to be navigated by a ship, means the chart catalogue for that area published by the Canadian Hydrographic Service;

"national authority" means the government of a country;

"nautical mile" means the international nautical mile of 1 852 m;"

"ship" includes every description of vessel used in navigation and not propelled by oars.

PART I

SHIPS IN CANADIAN WATERS AND FISHING ZONES

Application

3. (1) Subject to subsection (2), this Part applies to all self-propelled ships, other than ships of war, in

(*a*) Canadian waters south of the 60th parallel of north latitude;

(*b*) Canadian waters north of the 60th parallel of north latitude that are not within a shipping safety control zone prescribed pursuant to the *Arctic Waters Pollution Prevention Act*; and

(*c*) a fishing zone of Canada prescribed pursuant to the *Territorial Sea and Fishing Zones Act*.

Carriage of Charts and Publications

4. (1) Every ship shall have on board, in respect of each area to be navigated by the ship, at least the latest editions of the charts and the most recent issues of the publications that the ship is required by sections 5 and 6 to use.

(2) When making a voyage described in Column I of an item of the schedule, every ship shall, in addition to the charts required by subsection (1), have on board

(*a*) the latest editions of the Canadian Hydrographic Ser-

APPENDICE III

CHAPITRE 1415

LOI SUR LA MARINE MARCHANDE DU CANADA

Règlement sur les cartes et publications

RÈGLEMENT PRESCRIVANT AUX NAVIRES D'AVOIR À BORD, DE METTRE À JOUR ET D'UTILISER LES CARTES, L'ANNUAIRE DES MARÉES, LES NOMENCLATURES DES FEUX ET LES AUTRES PUBLICATIONS NAUTIQUES

Titre abrégé

1. Le présent règlement peut être cité sous le titre: *Règlement sur les cartes et publications*.

Interprétation

2. Dans le présent règlement,

«administration nationale» désigne le gouvernement d'un pays;

«catalogue» , en ce qui concerne une région où un navire est appelé à naviguer, désigne le catalogue des cartes que publie le Service hydrographique du Canada pour cette région;

«carte» désigne une carte marine;

«mille marin» désigne un mille marin international de 1 852 m;»

«navire» comprend les bâtiments de toute sorte employés à la navigation et non mus par des rames.

PARTIE I

NAVIRES DANS LES EAUX CANADIENNES ET LES ZONES DE PÊCHE DU CANADA

Application

3. (1) Sous réserve du paragraphe (2), la présente partie s'applique à tous les navires autopropulsés, sauf les navires de guerre, qui naviguent

a) dans les eaux canadiennes au sud du 60e parallèle de latitude nord;

b) dans les eaux canadiennes au nord du 60e parallèle de latitude nord, qui ne sont pas dans les limites d'une zone de contrôle de la sécurité de la navigation établie en vertu de la *Loi sur la prévention de la pollution des eaux arctiques*; et

c) dans une zone de pêche du Canada établie en vertu de la *Loi sur la mer territoriale et les zones de pêche*.

Cartes et publications

4. (1) Tout navire doit avoir à bord, pour chaque région où il est appelé à naviguer, au moins les cartes et publications les plus récentes qu'il est tenu d'utiliser selon les prescriptions des articles 5 et 6.

(2) Tout navire qui fait un voyage décrit à l'un des articles du tableau de l'annexe, dans la colonne I, doit avoir à bord, en plus des cartes prescrites par le paragraphe (1),

a) les cartes les plus récentes du Service hydrographique du Canada décrites dans la colonne II de cet article; ou

vice charts described in Column II of that item; or

(*b*) the latest editions of the charts published by any national authority that

(i) cover the same area as,

(ii) are at least as complete, accurate, intelligible and up-to-date as, and

(iii) are at a scale that is at least 75 per cent of the scale of

the latest editions of the charts described in Column II of that item.

b) les cartes les plus récentes publiées par une administration nationale

(i) qui représentent la même région,

(ii) qui sont au moins aussi détaillées, précises, intelligibles et récentes, et

(iii) dont l'échelle est au moins égale à 75 pour cent

par rapport aux plus récentes cartes décrites dans la colonne II de cet article.

Use of Charts

5. (1) Subject to subsection (2), every ship shall, in respect of the immediate area in which the ship is located, make proper navigational use of a chart that

(*a*) is published by a national authority;

(*b*) covers that immediate area; and

(*c*) provides a representation of the area covered by the chart that is

(i) as complete, accurate, intelligible and up-to-date as, and

(ii) at a scale that is at least 75 per cent of

the scale of the largest scale chart described in the most recent issue of the catalogue that is a chart of that immediate area.

(2) Where a ship is located

(*a*) more than 5 nautical miles from any charted feature or charted depth of water that represents a potential hazard to the ship, or

(*b*) within the area covered by a chart described in the most recent issue of the catalogue as a chart

(i) primarily intended for use of pleasure craft, or

(ii) primarily of an anchorage, a river or a harbour that is not entered by the ship,

"paragraph (1)(*c*) shall be deemed to refer to the second-largest scale chart of that immediate area as described in the most recent issue of the catalogue, if that second-largest scale chart is at a scale of not less than 1:400 000 (2.16 nautical miles to the centimetre)."

Utilisation des cartes

5. (1) Sous réserve du paragraphe (2), tout navire doit, pour la région même où il se trouve, utiliser correctement, lorsqu'il y navigue, une carte

a) qui est publiée par une administration nationale;

b) qui représente cette région; et

c) qui donne de la région cartographiée une représentation

(i) aussi détaillée, précise, intelligible et récente que celle que donne, et

(ii) à une échelle au moins égale à 75 pour cent de l'échelle à laquelle a été établie

la carte à l'échelle la plus grande de la région, décrite dans la plus récente édition du catalogue

(2) Lorsqu'un navire se trouve

a) à plus de 5 milles marins d'un objet ou d'une sonde qui sont indiqués sur une carte et qui peuvent présenter un danger pour le navire, ou

b) dans les eaux d'une région dont la carte, d'après la plus récente édition du catalogue , est une carte

(i) qui est surtout destinée aux bateaux de plaisance, ou

(ii) qui représente surtout un mouillage, un cours d'eau ou un port dans les eaux duquel ce navire ne pénètre pas,

«l'alinéa (1)*c*) est censé s'appliquer à la carte de cette région, telle qu'elle paraît dans la dernière édition du catalogue et dont l'échelle est la deuxième par ordre de grandeur décroissante; toutefois, cette échelle ne doit pas être inférieure à 1:400 000 (2.16 milles marins au centimètre).»

Use of Other Publications

6. (1) Subject to subsections (2) and (3), every ship shall, in respect of each area to be navigated by the ship, make proper navigational use of

(*a*) the following Canadian Government publications:

(i) tide and current tables,

(ii) sailing directions,

(iii) *List of Lights, Buoys and Fog Signals*,

(iv) where the ship is fitted with radio equipment, *Radio Aids to Marine Navigation*,

(v) *Code of Nautical Procedures and Practices, 1985*, and

(vi) where the ship in making a voyage during which ice may be encountered, *Ice Navigation in Canadian Waters*;

(*b*) the catalogue ; and

(*c*) the annual edition of Canadian *Notices to Mariners*.

Utilisation d'autres publications

6. (1) Sous réserve des paragraphes (2) et (3), tout navire doit, pour chaque région dans laquelle il est appelé à naviguer, utiliser correctement, lorsqu'il y navigue,

a) les publications suivantes du gouvernement canadien:

(i) l'annuaire des marées et des courants,

(ii) les instructions nautiques,

(iii) *Livre des feux, des bouées et des signaux de brume*,

(iv) si le navire est doté d'appareils radio, *Aides radio à la navigation*,

(v) Le *Code des méthodes et pratiques nautiques, 1985*,

(vi) si le navire fait un voyage au cours duquel il peut rencontrer des glaces, le *Guide à l'usage des navires marchands qui naviguent dans les glaces en eaux canadiennes*;

b) le catalogue ; et

c) l'édition annuelle des *Avis aux marins*.

(2) A publication of any national authority may be substituted for any Canadian Government publication described in paragraph (1)(*a*), if the publication is, in respect of information that may affect the safe navigation of the ship in the area being navigated, as complete, accurate, intelligible and up-to-date as the Canadian Government publication.

(3) No ship need use the *List of Lights, Buoys and Fog Signals* if the information contained in that publication that may affect the safe navigation of the ship is described on the charts used by the ship.

Exception

8. Notwithstanding the provisions of this Part, a ship shall be deemed not to have contravened this Part if, before the ship navigated an area for which a chart or publication is required and after the ship was informed that it would be navigating that area, it was not possible for the ship

(*a*) to obtain the required chart or publication at any harbour at which the ship called;

(*b*) to obtain safely and legally the required chart or publication at any harbour that the ship passed at such a distance that it would not have been unreasonable for the ship to obtain the chart or publication at that harbour; or

(*c*) to receive a radio navigation warning containing information that may have affected the safe navigation of the ship in that area.

(2) Une publication de toute administration nationale peut remplacer une publication du gouvernement canadien mentionnée à l'alinéa (1)*a*), si elle est aussi détaillée, précise, intelligible et récente que la publication du gouvernement canadien, pour ce qui est des renseignements qui peuvent concerner la sécurité de la navigation du navire dans la région où il est appelé à naviguer.

(3) Il n'est pas nécessaire pour un navire d'utiliser le *Livre des feux, des bouées et des signaux de brume* si les renseignements qu'elle contient et qui peuvent concerner la sécurité de la navigation du navire sont donnés sur les cartes qu'utilise le navire.

Exception

8. Nonobstant les dispositions de la présente partie, un navire n'est pas censé les avoir enfreintes si, avant de naviguer dans une région pour laquelle il est requis d'avoir une carte ou une publication et après avoir été informé qu'il naviguerait dans cette région, il lui a été impossible

a) d'obtenir la carte ou la publication requise à un port où il a fait escale;

b) d'obtenir en toute sécurité et licitement la carte ou la publication requise à un port devant lequel il a passé à une distance qui lui permettait raisonnablement d'obtenir ladite carte ou publication à ce port; ou

c) de recevoir un message radio sur les dangers pour la navigation contenant des renseignements qui pouvaient concerner la sécurité de la navigation du navire dans cette région.

1988 Annual Edition

NOTICES TO MARINERS 1 to 43

1 CANADIAN BUOYAGE SYSTEM AND PRIVATE BUOY REGULATIONS

THE CANADIAN AIDS TO NAVIGATION SYSTEM

The Canadian Aids to Navigation System is comprised of a mix of visual, audio and radio aids to navigation which, when used singly or in combination help the mariner to determine his position and course, warn him of dangers or obstructions and indicate the best or preferred route.

Visual Aids

Visual aids include buoys and fixed aids either of which may be lighted or unlighted. In Canada, a combined Lateral-Cardinal system of visual aids is used. A knowledge of the characteristics of each of these basic types of aids is a prerequisite to the safe use of the system.

Lateral Aids

Lateral aids may be in the form of either buoys or fixed aids. These aids indicate the location of hazards and of the safest or deepest water by indicating the side on which they are to be passed. The correct interpretation of lateral aids requires a knowledge of the direction of buoyage known as the "upstream direction". The upstream direction is the direction taken by a vessel when proceeding from seaward, toward the headwaters of a river, into a harbour or with the flood tide. In general, the upstream direction is in a southerly direction along the Atlantic Coast, in a northerly direction along the Pacific Coast and in an easterly direction along the Arctic Coast. In some waters the upstream direction is indicated on the charts by the use of lines and arrows.

When a vessel is proceeding in the upstream direction, starboard hand aids must be kept to starboard (right) and port hand aids must be kept to port (left)

Reference:

1. A detailed listing of all lighted visual aids and all fog signals is contained in the publication "List of Lights, Buoys and Fog Signals" (TP 394, 395, 396, and 397).
2. A detailed listing of all radio aids is contained in the publication "Radio Aids to Marine Navigation" (TP 145, 146).
3. A complete description of the Canadian aids to navigation system is contained in the publication "The Canadian Aids to Navigation System" (TP 968).

2 CAUTIONS IN THE USE OF AIDS TO NAVIGATION

1 Most aids to navigation are not under continuous observation and mariners should be aware that, with the many thousands of aids in Canada, failures and displacements do occur. The Coast Guard does not guarantee that aids to navigation will operate as advertised and be in the positions advertised at all times. Mariners observing lights out of operation, buoys, markers, etc., off charted position, damaged or missing are responsible for reporting such to the nearest Coast Guard Radio Station, Coast Guard Office, Vessel Traffic Centre, or Chief, Marine Aids, Canadian Coast Guard, Ottawa.

4 Mariners are cautioned not to rely solely on buoys for navigation purposes. Navigation should be by bearings or angles from fixed shore aids or other charted landmarks and by soundings whenever possible. Buoys should be considered only as warning markers.

5 The buoy positions shown on government charts should be considered only as approximate positions. There are a number of limiting factors in accurately positioning buoys and their anchors, such as prevailing atmospheric and sea conditions, tidal and current conditions, seabed conditions and the fact that buoys are moored to anchors by varying lengths of chain and may drift about their charted positions within the scope of their moorings.

ANNEX V

RECOMMENDED CODE OF NAUTICAL PROCEDURES AND PRACTICES TO BE FOLLOWED BY PERSONS ON BOARD SHIPS IN ORDER TO ENSURE SAFETY AND POLLUTION PREVENTION

PART I

BASIC PRINCIPLES TO BE OBSERVED IN KEEPING A NAVIGATIONAL WATCH

1. Parties shall direct the attention of shipowners, ship operators, masters and watchkeeping personnel to the following principles which shall be observed to ensure that a safe navigational watch is maintained at all times.
2. The master of every ship is bound to ensure that watchkeeping arrangements are adequate for maintaining a safe navigational watch. Under the master's general direction, the officers of the watch are responsible for navigating the ship safely during their periods of duty when they will be particularly concerned with avoiding collision and stranding.
3. The basic principles, including but not limited to the following, shall be taken into account on all ships.

PART II

RECOMMENDATION ON OPERATIONAL GUIDANCE FOR OFFICERS IN CHARGE OF A NAVIGATIONAL WATCH

INTRODUCTION

1. This Recommendation contains operational guidance of general application for officers in charge of a navigational watch, which masters are expected to supplement as appropriate. It is essential that officers of the watch appreciate that the efficient performance of their duties is necessary in the interests of the safety of life and property at sea and the prevention of pollution of the marine environment.

NAVIGATION IN COASTAL WATERS

20. The largest scale chart on board, suitable for the area and corrected with the latest available information, should be used. Fixes should be taken at frequent intervals; whenever circumstances allow, fixing should be carried out by more than one method.
21. The officer of the watch should positively identify all relevant navigation marks.

ANNEX VI

CANADA SHIPPING ACT

Ships' Deck Watch Regulations

REGULATIONS RESPECTING THE ESTABLISHMENT OF DECK WATCHES AND THE NUMBER AND QUALIFICATIONS OF NAVIGATIONAL PERSONNEL ON SHIPS

Interpretation

2. In these Regulations,

"deck watch" means that part of the complement that is required for the purpose of attending to the navigation or security of a ship; (*quart à la passerelle*)

"master" includes every person having command or charge of any ship, but does not include a pilot; (*capitaine*)

"tons" means gross tons. (*tonneau*)

Application

3. (1) Subject to subsection (2), these Regulations apply to all self-propelled ships of more than 5 tons in

"(*a*) Canadian waters;

(*b*) any shipping safety control zone prescribed pursuant to the *Arctic Waters Pollution Prevention Act*; and"

(2) These Regulations do not apply to

(*a*) a ship of war;

(*b*) a ship of 100 tons or less that is

(i) a fishing vessel,

(ii) a pleasure yacht, or

(iii) a ship engaged in transferring to shore the catch of a fishing vessel; or

(*c*) a ship that is securely made fast to the shore or laid up.

Qualifications of Navigational Personnel

8. (1) Subject to subsections (3), (4) and (5), no person shall act or be permitted to act as master or person in charge of the deck watch on a ship of more than 100 tons, unless he is

(*a*) the holder of a valid certificate or licence that is

(i) accepted by the Minister, and

(ii) appropriate for the duties to be performed, the class of the ship and the area in which the ship operates; and

(*b*) capable of properly operating the navigational equipment with which the ship is fitted.

APPENDICE VI

LOI SUR LA MARINE MARCHANDE DU CANADA

Règlement sur les quarts à la passerelle des navires

RÈGLEMENT CONCERNANT L'ÉTABLISSEMENT DES QUARTS À LA PASSERELLE AINSI QUE LE NOMBRE ET LES TITRES ET QUALITÉS DES MEMBRES DU PERSONNEL NAVIGUANT À BORD DES NAVIRES

Interprétation

2. Dans le présent règlement,

«quart à la passerelle» signifie la partie de l'effectif qui est nécessaire pour assurer la navigation ou la sécurité d'un navire; (*deck watch*)

«capitaine» comprend toute personne ayant le commandement ou la direction d'un navire mais ne comprend pas un pilote; (*master*)

«tonneau» s'entend du tonneau du jauge brute. (*tons*)

Application

3. (1) Sous réserve du paragraphe (2), le présent règlement s'applique à tous les navires autopropulsés jaugeant plus de 5 tonneaux, qui se trouvent dans

«*a*) les eaux canadiennes;

b) une zone de contrôle de la sécurité de la navigation prescrite en application de la *Loi sur la prévention de la pollution des eaux arctiques*; et»

(2) Le présent règlement ne s'applique pas

a) à un navire de guerre;

b) à un navire de 100 tonneaux au plus s'il est

(i) un bateau de pêche,

(ii) un yacht de plaisance, ou

(iii) un navire affecté au transport jusqu'à la terre de la prise d'un bateau de pêche; ni

c) à un navire qui est solidement amarré à la rive ou désarmé.

Qualités des membres du personnel de navigation

8. (1) Sous réserve des paragraphes (3), (4) et (5), nul ne doit remplir ou être autorisé à remplir les fonctions de capitaine ou de personne responsable du quart à la passerelle d'un navire jaugeant plus de 100 tonneaux, à moins d'être

a) titulaire d'un certificat ou d'une licence valable

(i) acceptés par le Ministre, et

(ii) correspondant aux fonctions à remplir, à la classe du navire ainsi qu'à la zone d'exploitation du navire; et

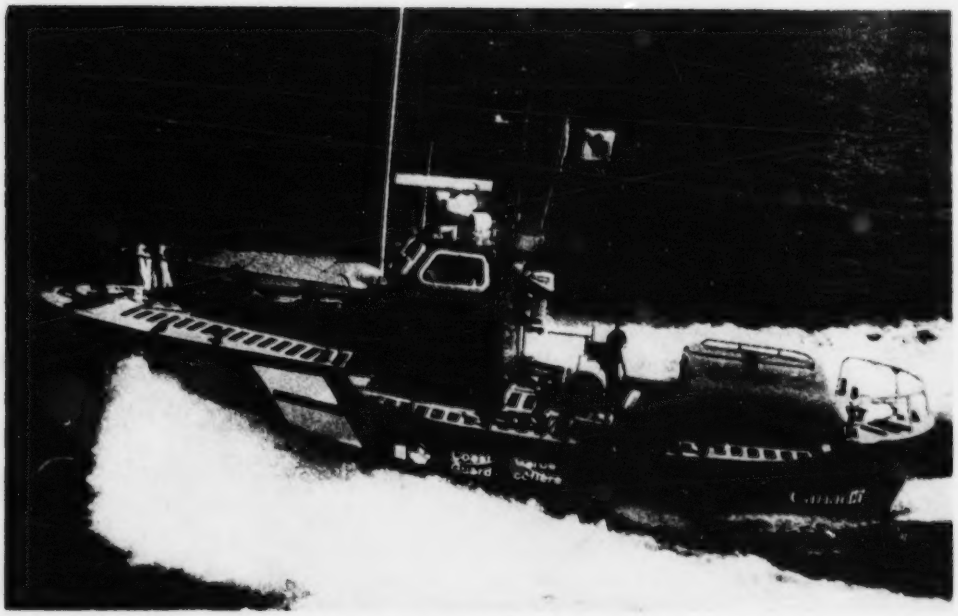
b) capable de faire fonctionner correctement les instruments de navigation dont le navire est muni.

Position of stranding
Flying Point, Goose Island

Position de l'échouement

Buoy TT4. Flying Point in background.
Bouée TT4. Flying Point à l'arrière plan.

Beached wreckage. Bow section at centre.
Épave échouée. Partie avant au centre.



Canadian Coast Guard Cutter (Lifeboat) identical to CCG "BICKERTON".

Côtre de la Garde côtière canadienne (vedette de sauvetage) identique au NGCC "BICKERTON".